

College Mathematics

ways to describe change

We can describe a change by comparing the new value to the old value:

If the new value is higher, we say there is an *increase*.

If the new value is lower, we say there is a *decrease*.

Suppose a price goes up from \$8 to \$10.

There are several ways we can think about this change:

How much was added to the price? [$8 + ? = 10$]

The new price is \$2 more than the old price.

Is that increase small or large (*relative to the original price*)? [2 is what % of 8?]

The new price is 25% more than the old price.

Is the new price small or large (*relative to the original price*)? [10 is what % of 8?]

The new price is 125% of the old price.

By what was the price multiplied? [$8 \times ? = 10$]

The new price is 1.25 times the old price.

Example 1: \$20 → \$28

\$28 is \$8 more than \$20.

$$[\$20 + \$8 = \$28]$$

\$28 is 40% more than \$20.

$$[\$20 + 40\%(\$20) = \$28]$$

\$28 is 140% of \$20.

$$[140\%(\$20) = \$28]$$

\$28 is 1.40 times \$20.

$$[1.40 \times \$20 = \$28]$$

Example 2: \$20 → \$60

\$60 is \$40 more than \$20.

$$[\$20 + \$40 = \$60]$$

\$60 is 200% more than \$20.

$$[\$20 + 200\%(\$20) = \$60]$$

\$60 is 300% of \$20.

$$[300\%(\$20) = \$60]$$

\$60 is 3 times \$20.

$$[3 \times \$20 = \$60]$$

Example 3: \$20 → \$17

\$17 is \$3 less than \$20.

$$[\$20 - 3 = \$17]$$

\$17 is 15% less than \$20.

$$[\$20 - 15\%(\$20) = \$17]$$

\$17 is 85% of \$20.

$$[85\%(\$20) = \$17]$$

\$17 is 0.85 times \$20.

$$[0.85 \times \$20 = \$17]$$